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EXAMINER	
KHAN, SUHAIL	

ART UNIT	PAPER NUMBER
2686	

DATE MAILED: 01/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/661,670	BEJERANO ET AL.	
	Examiner	Art Unit	
	Suhail Khan	2686	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-14 and 16-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-14 and 16-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1, 11-14 and 16-22 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims **1, 11-14 and 16-22** are drawn to a "program" *per se* as recited in the preamble and as such is non-statutory subject matter. See MPEP § 2106.IV.B.1.a. Data structures not claimed as embodied in computer readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention, which permit the data structure's functionality to be realized. In contrast, a claimed computer readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory. Similarly, computer programs claimed as computer listings *per se*, i.e., the descriptions or expressions of the programs are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not

define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3, 7, 9, 11-12, 14, 18, 20 and 22 rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent App. Pub. No. 2003/0143999 to Funato et al.

Referring to **claim 1**, Funato et al disclose a method for grouping cells (page 4, paragraph 59, paging area clustering; page 10, paragraph 125, cells in paging area) comprising: generating a linear program (page 3, paragraph 46, paging area configuration algorithm) representing a sum of weighted values associated with each cell, which represent a paging cost, and each edge between adjacent cells, which represent an updating cost (page 11, paragraph 138 shows the total paging cost being calculated as the sum of paging cost for area i and paging cost for area j; area i is interpreted as being the paging area encompassing each cell and area j is interpreted as being the paging area encompassing each edge; values alpha and beta are used for the individual cost calculation for each area i and j making these costs weighted; this weighted value carries over for the total paging cost as the individual weighted costs are added, resulting in a total weighted cost; if paging areas i and j are interpreted as being the paging areas encompassing each edge, the

sum of the cost of these areas thus represents weighted values representing an updating cost as the total cost gets updated as the mobile host location changes) and grouping constraints (page 3, paragraph 46, paging area configuration must minimize the overall network location updating and paging cost thus entailing constraints); and assigning a cell to a group based on solutions of the linear program (page 4, paragraph 59, paging area clustering; page 10, paragraph 125, cells in paging area; paging area is set based on clustering algorithm).

Referring to **claim 3**, Funato et al disclose the method of claim 1 wherein each cell comprises a wireless cell (page 10, paragraph 125, cells in paging area; page 2, paragraph 34, wireless communication).

Referring to **claims 7 and 18**, Funato et al disclose the grouping method (page 4, paragraph 59, paging area clustering) and programmed device (page 5, paragraph 64, implemented as software processes controlling operation in mobile host) as in claims 1 and 12 wherein the linear program (page 3, paragraph 46, paging area configuration algorithm) comprises a variable, where the variable equals: a first value, if elements i and j belong to different groups, or a second value, if i and j belong to the same group (page 11, paragraph 138 shows the total paging cost being calculated as the sum of paging cost for area i and paging cost for area j, this cost varies as individual areas i and j vary hence being variable; if areas i and j encompass a given area, the cost differs for one given area for i and j and another given area for i and j hence generating a first value and a second value).

Referring to **claim 9**, Funato et al disclose the method as in claim 1 wherein the group comprises a location area associated with one or more wireless networks (page 10, paragraph 125, cells in paging area; page 2, paragraph 34, radio communication network).

Referring to **claim 11**, Funato et al disclose a method for grouping cells in a line (page 3, paragraph 46, paging area configuration algorithm; figure 7, linearly arranged paging areas) comprising: generating a dynamic program (page 3, paragraph 46, algorithm) representing a sum of weighted values associated with each cell, which represent a paging cost, and each edge between adjacent cells, which represent an updating cost, (page 11, paragraph 138 shows the total paging cost being calculated as the sum of paging cost for area i and paging cost for area j; area i is interpreted as being the paging area encompassing each cell and area j is interpreted as being the paging area encompassing each edge; values alpha and beta are used for the individual cost calculation for each area i and j making these costs weighted; this weighted value carries over for the total paging cost as the individual weighted costs are added, resulting in a total weighted cost; if paging areas i and j are interpreted as being the paging areas encompassing each edge, the sum of the cost of these areas thus represents weighted values representing an updating cost as the total cost gets updated as the mobile host location changes) and grouping constraints (page 3, paragraph 46, paging area configuration must minimize the overall network location updating and paging cost thus entailing constraints); and assigning a cell to a group based on solutions of the dynamic program (page 4, paragraph 59, paging area clustering; page 10, paragraph 125, cells in paging area; paging area is set based on clustering algorithm).

Referring to **claim 12**, Funato et al disclose a programmed device (page 5, paragraph 64, implemented as software processes controlling operation in mobile host) for grouping cells (page 3, paragraph 46, paging area configuration algorithm; page 10, paragraph 125, cells in paging area) operable to: generate a linear program (page 3, paragraph 46, paging area configuration algorithm) representing a sum of weighted values associated with each cell, which represent a

paging cost, and each edge between adjacent cells, which represent an updating cost (page 11, paragraph 138 shows the total paging cost being calculated as the sum of paging cost for area i and paging cost for area j; area i is interpreted as being the paging area encompassing each cell and area j is interpreted as being the paging area encompassing each edge; values alpha and beta are used for the individual cost calculation for each area i and j making these costs weighted; this weighted value carries over for the total paging cost as the individual weighted costs are added, resulting in a total weighted cost; if paging areas i and j are interpreted as being the paging areas encompassing each edge, the sum of the cost of these areas thus represents weighted values representing an updating cost as the total cost gets updated as the mobile host location changes), and grouping constraints (page 3, paragraph 46, paging area configuration must minimize the overall network location updating and paging cost thus entailing constraints); and assign a cell to a group based on solutions of the linear program (page 4, paragraph 59, paging area clustering; page 10, paragraph 125, cells in paging area; paging area is set based on clustering algorithm).

Referring to **claim 14**, Funato et al disclose the programmed device of claim 12 wherein each cell comprises a wireless cell (page 10, paragraph 125, cells in paging area; page 2, paragraph 34, wireless communication).

Referring to **claim 20**, Funato et al disclose the programmed device as in claim 12 wherein the group comprises a location area associated with one or more wireless networks (page 10, paragraph 125, cells in paging area; page 2, paragraph 34, radio communication network).

Referring to **claim 22**, Funato et al disclose a programmed device for grouping cells in a line (page 3, paragraph 46, paging area configuration algorithm; figure 7, linearly arranged

paging areas) operable to: generate a dynamic program (page 3, paragraph 46, algorithm) representing a sum of weighted values associated with each cell, which represent a paging cost, and each edge between adjacent cells, which represent an updating cost (page 11, paragraph 138 shows the total paging cost being calculated as the sum of paging cost for area i and paging cost for area j; area i is interpreted as being the paging area encompassing each cell and area j is interpreted as being the paging area encompassing each edge; values alpha and beta are used for the individual cost calculation for each area i and j making these costs weighted; this weighted value carries over for the total paging cost as the individual weighted costs are added, resulting in a total weighted cost; if paging areas i and j are interpreted as being the paging areas encompassing each edge, the sum of the cost of these areas thus represents weighted values representing an updating cost as the total cost gets updated as the mobile host location changes), and grouping constraints (page 3, paragraph 46, paging area configuration must minimize the overall network location updating and paging cost thus entailing constraints); and assign a cell to a group based on solutions of the dynamic program (page 4, paragraph 59, paging area clustering; page 10, paragraph 125, cells in paging area; paging area is set based on clustering algorithm).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2, 5, 13 and 16 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent App. Pub. No. 2003/0143999 to Funato et al, further in view of U.S. Patent No. 6008704 to Opsahl et al.

Referring to **claims 2 and 13**, Funato et al disclose the grouping method (page 4, paragraph 59, paging area clustering) and programmed device (page 5, paragraph 64, implemented as software processes controlling operation in mobile host) as in claims 1 and 12 respectively. Funato et al do not disclose that the solutions comprise fractional values. The examiner maintains that the concept of solutions comprising fractional values was well known in the art as taught by Opsahl et al.

In a similar field of endeavor, Opsahl et al show a fractional number (col 1, lines 50-60).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Funato et al to show the grouping method and programmed device comprising solutions comprising fractional values, as taught by Opsahl et al, the motivation being using results to control output (Opsahl et al, col 1, lines 22-27).

Referring to **claims 5 and 16**, Funato et al disclose the grouping method (page 4, paragraph 59, paging area clustering) and programmed device (page 5, paragraph 64, implemented as software processes controlling operation in mobile host) of claims 2 and 13. Funato et al do not disclose rounding the fractional values into integer values. The examiner maintains that the concept of rounding the fractional values into integer values was well known in the art as taught by Opsahl et al.

In a similar field of endeavor, Opsahl et al show converting a fractional number into a integer value (col 1, lines 50-60).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Funato et al to show the grouping method and programmed device comprising rounding the fractional values into integer values, the motivation being making it easier to interpret results, as taught by Opsahl et al, the motivation being using results to control output (Opsahl et al, col 1, lines 22-27).

7. Claims 6, 10, 17 and 21 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent App. Pub. No. 2003/0143999 to Funato et al, further in view of U.S. Patent No. 6973098 to Lundby et al.

Referring to **claims 6 and 17**, Funato et al disclose the grouping method (page 4, paragraph 59, paging area clustering) and programmed device (page 5, paragraph 64, implemented as software processes controlling operation in mobile host) as in claims 5 and 16. Funato et al do not disclose rounding the fractional values using region growing. The examiner maintains that the concept of rounding fractional values using region growing was well known in the art as taught by Lundby et al.

In a similar field of endeavor, Lundby et al show region growing (col 13, lines 20-35).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Funato et al to show the method and programmed device further comprising rounding the fractional values using region growing, as taught by Lundby et al, the motivation being efficient grouping (Lundby et al, col 13, lines 33-35).

Referring to **claims 10 and 21**, Funato et al disclose the grouping method (page 4, paragraph 59, paging area clustering) and programmed device (page 5, paragraph 64, implemented as software processes controlling operation in mobile host) as in claims 5 and 12

further comprising approximating costs associated with updating and paging operations (page 3, paragraph 46, updating and paging cost) of one or more wireless networks (page 2, paragraph 34, radio communication network). Funato et al do not disclosing approximating costs from the rounded values. The examiner maintains that the concept of approximating costs from the rounded value was well known in the art as taught by Lundby et al.

In a similar field of endeavor, Lundby et al show approximation (col 13, lines 30-33).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Funato et al to show the method and programmed device comprising approximating costs associated with updating and paging operations of one or more wireless networks from the rounded values, as taught by Lundby et al, the motivation being efficient grouping (Lundby et al, col 13, lines 33-35).

8. Claims 8 and 19 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6934555 to Silva et al.

Referring to **claims 8 and 19**, Funato et al disclose the grouping method (page 4, paragraph 59, paging area clustering) and programmed device (page 5, paragraph 64, implemented as software processes controlling operation in mobile host) as in claims 7 and 14. Funato et al do not disclose expressly that the first value equals 1 and the second value equals 0.

In a similar field of endeavor, Silva et al show variable parameters with two different values 0 and 1 (col 19, lines 57-60).

Therefore, it would have been obvious to one of ordinary skill in this art to modify Funato et al. to show that the first value equals l and the second value equals 0, as taught by Silva

et al, the motivation being setting parameter values to yield results (Silva et al, col 19, lines 59-62).

Response to Arguments

9. Applicant's arguments filed 10/12/2005 were fully considered. The 101 rejection is maintained. Arguments regarding claims 2, 5-6, 8, 10, 13, 16-17, 19 and 21 have been considered but are moot in view of new grounds of rejection. Arguments regarding claims 1, 3, 7, 9, 11-12, 14, 18, 20 and 22 are not persuasive. Applicant argues that Funato et al do not disclose a linear program representing a sum of weighted values associated with a paging cost and updating cost. The examiner respectfully disagrees. In page 11, paragraph 138, Funato et al show the total paging cost being calculated as the sum of paging cost for area i and paging cost for area j; area i is interpreted as being the paging area encompassing each cell and area j is interpreted as being the paging area encompassing each edge; values alpha and beta are used for the individual cost calculation for each area i and j making these costs weighted; this weighted value carries over for the total paging cost as the individual weighted costs are added, resulting in a total weighted cost; if paging areas i and j are interpreted as being the paging areas encompassing each edge, the sum of the cost of these areas thus represents weighted values representing an updating cost as the total cost gets updated as the mobile host location changes.

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suhail Khan whose telephone number is (571) 272-7910. The examiner can normally be reached on M-F from 8 am to 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold, can be reached at (571) 272-7905.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sk

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